



## New Landscapes, New Challenges: The Changing Strategic Horizon (WP)

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### Introduction [\[1\]](#)

New landscapes and new challenges are beginning to emerge on the strategic horizon. Traditional risks continue to pose relatively familiar political, economic, diplomatic and military challenges –for Europe in general and for Spain in particular– in several parts of the world. However, the past few years have witnessed the emergence of new phenomena with a significant potential to pose strategic challenges in the international arena.

In the early 1990s, a new strategic environment, defined by the end of the Cold War and the collapse of communism, quickly took shape. Democratic and market transition, economic development and an end to poverty, along with the general spread of prosperity and peace were not only hopes but real concrete opportunities generated by this new strategic landscape. With time, however, we have seen how the 'end of history' –longed for by some– continues to elude us. As the 20<sup>th</sup> century came to a close, the so-called 'clash of civilisations' and the emergence of international terrorism (particularly that perpetrated by radical Islamic groups), along with the spectre of failed states and the proliferation of weapons of mass destruction, conspired to dominate the strategic outlook for the following years, as the world experienced a spate of major terrorist attacks, large-scale military intervention in Afghanistan and Iraq and, now, the Iranian nuclear crisis and the related outburst of the Hezbollah-Israeli conflict in the Lebanon.

Nevertheless, it would now appear that the very global backdrop against which these more traditional strategic threats developed is itself rising up in rebellion, provoking a wave of newer, less conventional strategic challenges to which we have scarcely managed to react. New risks unleashed by 'Mother Nature', such as natural disasters, pandemics and climate change –the reach and impacts of which are intensifying as a result of ongoing globalisation, demographic growth and urbanisation– are some of the new phenomena which have recently emerged on the strategic horizon. Yet 'human' risks also continue to proliferate in new variant forms. The possibility of a destabilising abuse of cyberspace now poses challenges that were unthinkable only a few years ago. And, last but not least, the energy foundation of our local and global economies has become the new universal *leitmotiv* threading together nearly all of our political and economic challenges.

On the other hand, in recent years the benign, even robust, evolution of the international economy has continued to blow a cool breeze across this smouldering strategic landscape, facilitating the resolution of many of these problems while mitigating the impacts and potential dangers of others. For now, at least, the international economy continues to run smoothly, providing a comforting balm to nervous or resentful actors upon the strategic landscape. But the good times could be coming to an end.

Our aim here is to identify and reflect upon these newer, less traditional, strategic challenges, along with other more well-known conventional threats that are now in urgent need to be addressed afresh, given recent transformations in the strategic environment. It is essential to examine these new strategic challenges at length, posing important questions as to when and how Spain, Europe and the international community will respond to them.

### Mother Nature: A Strategic Risk?

When discussing societal threats, natural disasters and biological risks are usually mentioned along with national and international terrorism. However, ever since the attacks of 11 September 2001, much more world attention has been given to terrorism than to natural disasters and biological threats when evaluating strategic outlooks and designing common actions and strategies. After all, we are committed to a more or less coordinated war effort against international terrorism, whereas the threats posed by Mother Nature are almost always dealt with in an improvised manner, with the approach focused more on reconstruction than on foresight and prevention.

Nonetheless, there are many signs that the time has come to begin to treat Mother Nature as a strategic risk whose ability to destabilise conditions required for peace and prosperous coexistence between countries and peoples is similar to –or even greater than– that of terrorism today.

There are three main reasons why natural disasters are becoming more imminent and much more serious strategic risks than in the past: (1) globalisation; (2) demographic development; and (3) climate change.

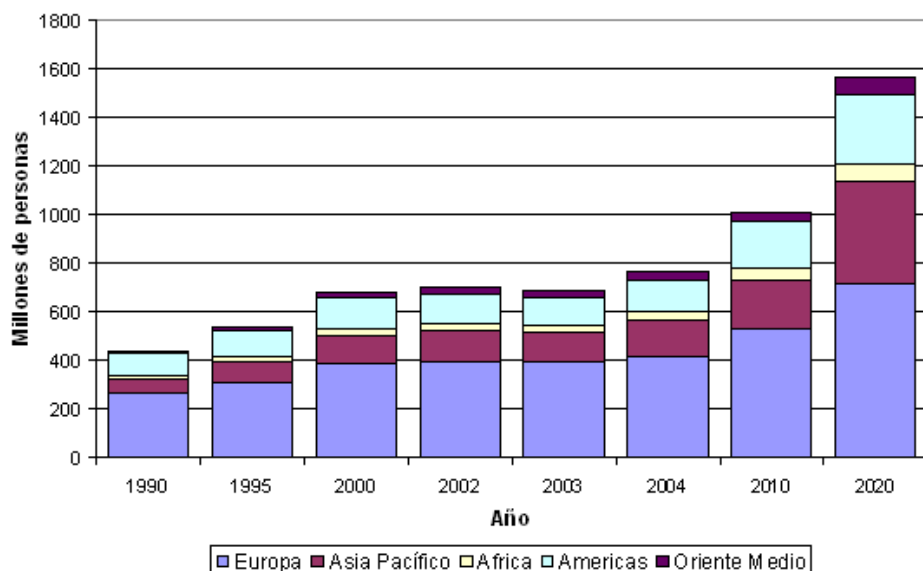
#### *The New Wave of Globalisation: Magnifying the Spread of Infectious Diseases*

New technologies are giving rise to a new wave of globalisation in which billions of people travel regularly and frequently, both as tourists and as business agents.[\[2\]](#) The present-day *globetrotter* covers larger distances and does so much more quickly than in any other period in human history. At the same time, larger volumes of goods are transported longer distances and in much shorter time-frames than ever before. Interaction and human exchange

scarcely know any limits in our present modern society. However, these positive features also pose a threat with respect to the spread of infectious diseases.

Nonetheless, the problem of the new wave of globalisation is not growing interconnectivity in itself, as this phenomenon has existed for centuries, but rather the much shorter time-frame required for humans to make a global connection. Until fairly recently an intercontinental voyage took weeks. Today it is possible to travel to any major international destination in less than 24 hours. To give an example, the Madrid-Barajas airport provides direct connections to 105 airports; with just one transfer it has connections to 1,100 and with two transfers it is possible to travel to over 2,500 national and international airports.

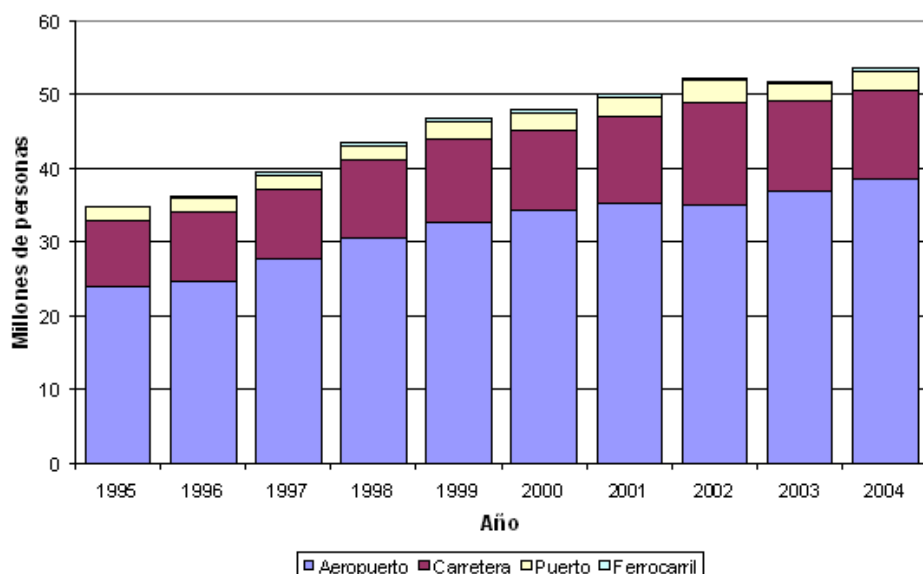
**Graph 1. Tourism, International Arrives Worldwide, 1990-2020**



Source: World Tourism Organization, 2005.

Another problem is volume of air travel. Madrid-Barajas is the fifth-largest airport in Europe, with 35 million passengers passing through it in 2003. International tourism accounts for a significant percentage of air passenger traffic and is growing almost exponentially. Some 265 million people arrived in Europe in 1990, 416 million in 2004 and the expected figure for 2020 is 717 million. After France, Spain is the country that receives the highest number of tourists in the world. Fifty million people arrived in Spain in 2004, and over 4.5 million Spaniards visited other countries that year.

**Graph 2. Tourism, International Arrivals, Spain, 1995-2004**



Source: World Tourism Organization, 2005.

The drastic reduction in the amount of time needed to make a physical connection anywhere in the world and the spectacular growth in the volume of passenger traffic multiply the likelihood of a new disease becoming a pandemic. For example, SARS would probably never have spread beyond rural China without the current air transport network. The outbreak of SARS in 2003 extended from Hong Kong to North America and Europe, claiming a considerable number of victims within only a fortnight. The SARS epidemic and the manner in which it spread throughout the

world are a warning sign of one of the disadvantages of the globalisation process currently under way. Similarly, considering that the new wave of globalisation has scarcely begun –and that the volume of passenger traffic is likely to increase even more while travel times will continue to shorten– there is little doubt that globalisation provides an excellent infrastructure for the spread of infectious diseases.

To illustrate the problem, imagine that a disease suddenly emerges that would spread with the same ease as, say, chicken pox (*varicella*). Chicken pox is a cosmopolitan and highly contagious disease. It is transmitted by direct contact with an infected person's blisters and by inhaling respiratory secretions containing the virus. The period of contagion lasts from one or two days *before* the rash breaks out until a crust forms on the blisters. Because the virus is so contagious, just one person could easily transmit the disease to all the passengers of an aircraft without the carrier or anyone else realising. Bearing in mind that the carrier must first check in at the airport, which is also a source of risk given the large volume of travellers, the virus could be spread throughout nearly the entire world in less than 24 hours.

There is currently a major concern that the influenza virus known as H5N1 –or more popularly as bird flu– most likely displays all of these aforementioned characteristics. Like chicken pox, this flu is highly contagious and is transmitted through droplets in the air, although, unlike chicken pox, its mortality rate can be very high, given the type of influenza in question.

As its popular name indicates, the H5N1 virus currently affects mainly fowl and so far has only been transmitted to humans through intense contact with infected birds. Nevertheless, the virus has been present in Asia for quite some time. Several alerts were raised during 2005 and at the beginning of 2006 concerning the possible spread of bird flu, which by then had reached certain European countries like Russia, Greece and Turkey (killing four of the 12 people infected in the latter). While the seriousness of this development should not be not be exaggerated, nor should it be taken too lightly. Bird flu continues to be a disease that only spreads easily among fowl, although the number of cases of transmission from birds to humans is growing, and the disease has a very high mortality rate in such cases, particularly among young people. According to the WHO, between 2003 and early 2006 there were 161 known cases of humans contracting the disease after having had contact with infected birds; more than half (86) died. Thus far there is no indication that the virus has mutated in such a way so as to be transmitted from person to person. Nevertheless, as the number of cases of transmission of the virus from birds to humans continues to mount, so too does the likelihood that one day the virus will become transmissible between humans.

This is not the first time that a virus initially affecting mainly birds has ultimately proven dangerous to humans. The most recent pandemics of 1957 and 1968 were triggered by an exchange of genes between an avian and a human influenza virus. The same was true of the 1918 pandemic. However, there is a significant difference between the 1918 pandemic and those of 1957 and 1968. According to many experts, the 1918 flu virus began by only affecting birds; however, following a series of mutations, the virus began to spread effectively to –and between– humans, although the 1918 bird flu did not exchange any genes with a human virus. While the possibility does exist that H5N1 could exchange genes with a human influenza virus and, accordingly, acquire the ability to transmit itself between humans, so far H5N1 has followed the same trajectory as the virus responsible for the 1918 pandemic. There are still other similarities with the 1918 episode. These include the severity of the illness and its high mortality rate; H5N1's tendency to affect young, healthy people; along with the incidence of primary viral pneumonia and the absence of secondary bacterial infection. Although the high mortality rate of the virus would probably drop off somewhat if it became transmissible between human beings, the fact that the subtype H5 has never circulated among humans indicates that the population would be universally vulnerable to a mutated H5N1.

Should H5N1 acquire the capacity to spread among humans, two possible scenarios –one mild and another more severe– would present themselves. In the first scenario, the mortality rate would remain low and the population most at risk would be the two extremes of the human life cycle: the youngest and the oldest. The WHO estimates that worldwide deaths caused by such a pandemic could reach up to between seven and eight million more than in a normal year. Even so, a very large number of people –hundreds of millions– would fall ill. In the more severe scenario, however, the outlook would be much more grim. Taking the 1918 pandemic as a reference, we know that between 25% and 30% of the world's population became infected with the flu virus during 1918 and 1919, while between 40 and 100 million people died as a direct consequence of the disease. Bearing in mind that, at the time, world population was only some 1.8 billion, nearly 540 million people became ill and between 2% and 5% of the world's population died in approximately one year. Using the data from the 1918 epidemic as a base reference for a severe scenario today, some 1.8 billion people could fall ill and between 126 and 315 million might die, most of whom would be healthy young people.

What would be the consequences for society of such a pandemic? Although the number of deaths in the severe scenario is chilling, the principal societal problem would be medical care, given that the number of people who would likely contract the disease would be very high, regardless of whether the pandemic would only mild or much more severe. Because there has never previously existed an international infrastructure sufficient to allow a virus to spread among a 'virgin population' worldwide in less than 24 hours, it would now be reasonable to expect that the first outbreak of such a pandemic could occur simultaneously all around the world. The consequences, as we can imagine, could be devastating. Within a matter of days, hundreds of millions of people would have caught the disease, provoking a widespread, simultaneous collapse of the healthcare services in all affected countries. Simply visiting a hospital could pose a severe risk of exposure to the virus. Because no vaccines or effective treatment exists for the H5N1 virus, entire societies would probably enter a state of shock and, in all likelihood, panic.

Our security forces would have to be prepared to maintain a minimum of order. The problem is that any and all

institutions would be affected by the disease. Both the armed forces and law enforcement agencies would themselves risk losses of some 2% to 5%, to say nothing of a very high percentage –perhaps as much as 25% to 30%– of sick and convalescent. This would mean that security forces would have to perform their duties in highly unfavourable conditions. Even their capacity to effectively execute their tasks might be brought into question. Furthermore, when attempting to maintain order in an ailing, disintegrating society, the army and security forces would be exposed to an even greater risk of contracting the disease.

The keys for coping with a potential pandemic are precaution, time and preparation. As for precaution, a pandemic makes society extremely vulnerable and, as such, poses a significant security risk. Therefore, any measures designed to prevent the H5N1 virus from mutating represent a valuable investment in a society's security. The WHO has already designed a strategy for tackling this issue. In the event the disease should become a reality, the important thing would be to stem its spread as much as possible at the site of outbreak, as this would increase the possibilities of developing a vaccine and suitable medication for keeping the disease in check. However, in the case of Spain –one of the most visited countries in the world– this would be particularly difficult. The necessary measures might appear very drastic to some, but we must be prepared to isolate an entire country from external contact and to minimise contact between people within that country if we are to achieve the desired result. Even then, success would not be guaranteed. Finally, if our precautions against (and our attempts to stem the spread of) the disease fail, we would need to be prepared for the worst. What will be the action plan of our military and security forces in the not entirely unlikely case that the country were to be struck by a new illness resulting in a shockingly high number of sick and dead in a matter of only days –a situation that could very likely unleash chaos across society?–.

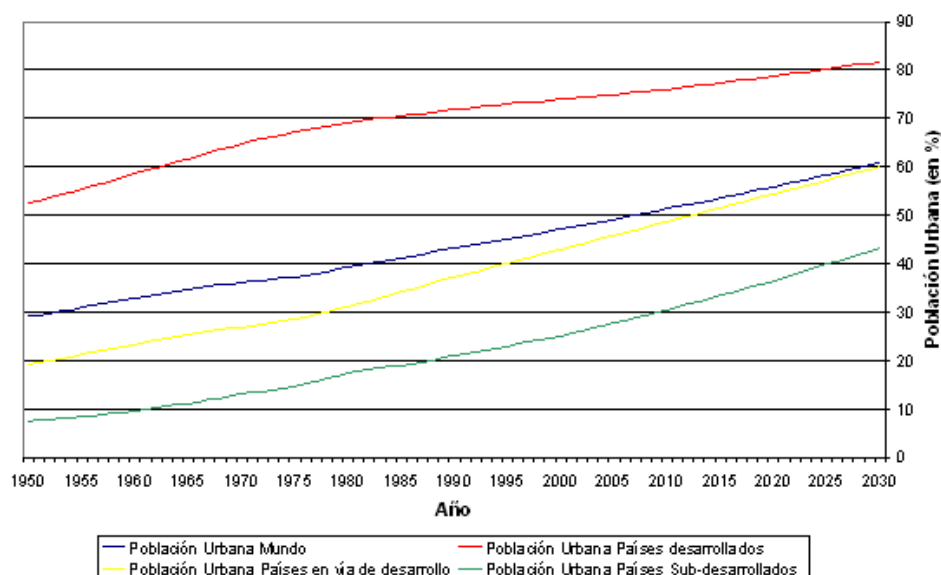
#### *Demographic Growth: A Magnifier of Natural Disasters*

Demographic growth involves two main processes. On the one hand, there is the overall growth of the world's population, which will continue to be very significant throughout the 21<sup>st</sup> century. On the other hand, there is the process of urbanisation, now taking place at a feverish pace in most of the less-developed world. Both processes, however, contribute to an increase in population density, particularly in metropolitan areas.

How does demographic growth affect the analysis of the strategic risks posed by Mother Nature? There are two main concerns. First, one may deduce that areas with high population densities are more vulnerable to natural disasters like earthquakes, flooding or tropical storms. What is more, coastal areas are undoubtedly much more vulnerable to natural disasters than inland zones. Nevertheless, much of the urbanisation now taking place in developing countries is concentrated precisely along coastal areas. In Southeast Asia, for example, 65% of cities with over 2.5 million inhabitants are located in coastal areas. In Latin America and the Caribbean, 57 of the 77 largest cities are coastal. Over one-third of the world's population currently lives less than 62 kilometres from the seacoast and 13 of the 20 largest cities in the world are situated on the sea.

In view of future demographic trends and the continued development of coastal zones, it is foreseeable that the potential damage, both material and human, caused by an extreme meteorological phenomenon will continue to increase into the future, *even should the incidence of such phenomena remains constant*.

**Graph 3. Evolution of Urbanisation, 1950-2030**



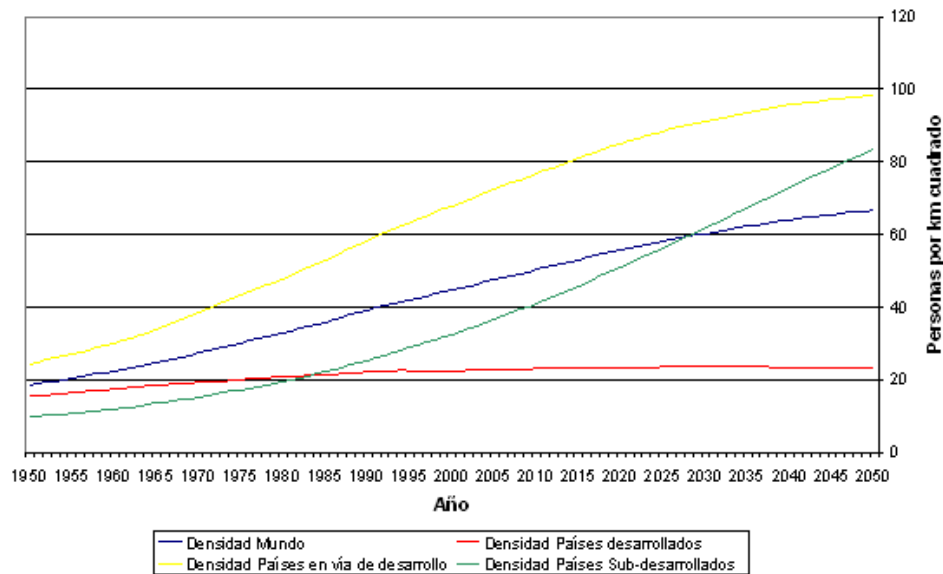
Source: UN, *World Population Prospects*, 2004.

The recent hurricane Katrina, which submerged 80% of New Orleans and claimed over 1,300 lives, illustrates the difficulties that even one of the richest countries in the world faces in preventing and alleviating a disaster in the making. If Katrina's trajectory had been different and, instead of affecting a rich country with a large population, it had struck a poor country with a high population density in the area in question, the material and human damage would have been much greater. In 1998, hurricane Mitch killed 9,000 people in Central America and caused material and infrastructure damage that has still not been fully repaired, while in 1991 the tropical cyclone Gorky left 138,000 dead in Bangladesh. More recently, the Indian Ocean tsunami at Christmas 2004 swept over the very

densely populated countries of the region, killing nearly 300,000 people. In 2005 an earthquake claimed 80,000 lives in Pakistan, another country with a high population density.

Natural disasters of this kind are not only tragedies for those affected; they also require the effort of the armed forces and the police to guarantee order in the region in question and sometimes across the entire country. From a military viewpoint, Katrina was a huge challenge for the US armed and security forces. On September 7, 2005, the US posted a contingent of 63,000 military personnel to the area affected by the hurricane. Of these, 25,000 were assigned to New Orleans. A large number of police from all over the country also assisted with rescue and security tasks. Pakistan deployed between 70,000 and 80,000 troops following the 2005 earthquake. Natural disasters also often require unforeseen international participation. In the case of Pakistan, Spain sent a contingent of 370 military personnel. The fact that demographic trends increase our vulnerability to natural disasters means that the armed forces should be prepared for more intense requirements for troop deployment in order to cope with strategic risks of this type in the near future.

**Graph 4. Evolution of Population Density, 1950-2050**



Source: UN, *World Population Prospects*, 2004.

The second concern related to demographic growth is biological. While globalisation is an effective means of increasing the speed of contact between people located considerable distances apart, demographic growth, and above all urbanisation, are very effective means of promoting opportunities for contact within a particular limited area. Both globalisation and demographic growth (particularly urbanisation) contribute to the potentially more rapid spread of diseases old and new. It therefore does not surprise us that the origins of our most recent pandemics have been in Asia.

Urbanisation and demographic growth more generally have led to a genuine population explosion in the world's cities. When the last major pandemic occurred in 1918, the ten largest cities in the world had smaller populations than Tokyo in 2005. Furthermore, many of the 21<sup>st</sup>-century megalopolises are located in parts of the world with a high rate of seismic activity, in tropical zones, and in coastal regions. The significant concentration of population in the megalopolises makes them extremely vulnerable to any epidemic, and increases the likelihood of there being a sufficient number of infected people to make a pandemic possible.

**Table 1. The Ten-Largest Cities in the World, Millions of Inhabitants, 1900-2015**

Position	1900		1950		2005		2015	
1	London	6.4	New York	12.3	Tokyo	35.3	Tokyo	36.2
2	New York	4.2	Tokyo	11.2	Mexico DF	19.0	Mumbai	22.6
3	Paris	3.3	London	8.3	New York	18.5	Delhi	20.9
4	Berlin	2.7	Paris	5.4	Mumbai	18.3	Mexico DF	20.6
5	Chicago	1.7	Moscow	5.3	Sao Paulo	18.3	Sao Paulo	19.9
6	Vienna	1.7	Shanghai	5.3	Delhi	15.3	New York	19.7
7	Tokyo	1.5	Rhein-Ruhr	5.3	Calcutta	14.3	Dhaka	17.9
8	St Petersburg	1.4	Buenos Aires	5.0	Buenos Aires	13.3	Jakarta	17.4
9	Manchester	1.4	Chicago	5.0	Jakarta	13.2	Lagos	17.0
10	Philadelphia	1.4	Calcutta	4.4	Shanghai	12.6	Calcutta	16.8

Source: ONU, *World Population Prospects*, 2004.

#### *Climate Change: The Magnifier of Magnifiers*

Lastly, when analysing the strategic risks posed by Mother Nature, we should not overlook the climate changes that have been observed over the last half century. The complexity of this phenomenon requires an analysis that goes

beyond the limitations of this paper and therefore prevents us from exploring this problem in full detail. Nevertheless, this analysis aims to stress the potential strategic problems that climate change may imply.

It is generally agreed that current climate changes are partly the result of human activity. However, there is less consensus as to the extent of this human influence and the exact nature of its impact. That is say, there is still a certain amount of disagreement over how much of today's climate changes can be explained by human activity and how much can be attributed to cyclical climatic factors unrelated to human intervention. Nonetheless, there is a body of evidence to back the argument that global warming is the result of the emission of carbon dioxide and other greenhouse gases stemming from human activities such as industrial processes, fossil-fuel combustion and changing land use (for example, deforestation).

The purpose of this section, however, is not to evaluate whether climate changes are due to a greater or lesser extent to human activity. Such an analysis is largely the task of others. It is also the job of others to design appropriate countermeasures should human activity indeed be determined to be decisive to climate change. From a short- and medium-term strategic point of view, however, it is sufficient to conclude that climate change has been and is continuing to occur, implying a number of consequences that require advance strategic planning in order to face up to the challenges posed by Mother Nature.

Current projections point to a temperature rise of between 1.4°C and 5.8°C (depending on the region) for the year 2100. Nevertheless, meteorological changes related to the increase in global temperatures and a range of human activities are already being witnessed. For example, global warming has caused a higher incidence of periods of extreme temperatures. Apart from more heat or cold waves, global warming also entails a greater incidence and intensity of rainfall, and a very significant rise in the sea level. Similarly, there is a grounded and legitimate concern than the heating of the planet may change regional climate patterns, with extreme meteorological phenomena spreading geographically; indeed, some experts even predict that such extreme weather phenomena will become typical and will no longer be considered unusual.

Given the correlation between high sea temperatures and the formation of hurricanes, it has been speculated that the frequency of hurricanes will increase in a hotter world. It may be argued against this notion that there is no evidence to demonstrate that the frequency of hurricanes has risen over the long term, with temperature increases. However, because the temperature of the sea's surface has a decisive influence on the intensity of a tropical storm (i.e., the higher the temperature, the greater the intensity), experts reckon that global warming is responsible for the increased intensity of hurricanes witnessed over the past years. The hurricane seasons of 2004 and 2005 were unprecedented in their intensity. The economic damage and the number of people affected by hurricanes have also shot up in recent years. It should be stressed that the rise in sea surface temperature could also influence the path of hurricanes, making them more likely to reach, for example, the North American coast than in the past. Nor can we rule out the possibility of hurricanes and tropical storms erupting in places that have so far been immune to such phenomena. Since demographic growth magnifies the impact of natural disasters, all that remains to be concluded is that if the frequency and intensity of natural disasters are increasing due to climate change, this adds further complications to an already complex outlook with natural disasters playing an increasingly destabilising role in the world.

Extreme weather conditions are not the only worrying factor when the effects of climate change are analysed. It is very likely that the environmental impact of global warming will disrupt the ecosystem of the entire planet in ways that are currently still impossible to anticipate. Many expect biodiversity to diminish as rising, extreme temperatures become noticeable. The direct consequence of such a change will be the extinction of certain species. However, what is bad for some is often good for others. Certain existing species could benefit from, even thrive on such changes. Nor can we rule out the possibility that new life forms might appear. What is more, there will be an imminent risk of current infectious diseases broadening their geographical scope of transmission. Diseases such as malaria and dengue fever might spread more extensively. Once such changes take place within the ecosystem, a chain reaction can be expected to occur, possibly leading to modifications in the laws regulating the appearance and development of viruses. That is to say, that while it is not entirely clear that environmental changes will make humans more vulnerable to infectious diseases, it is highly likely to be the case.

In other words, when assessing the possible impact of climate change, we may conclude that: (1) it is highly likely that natural disasters –such as tropical storms, hurricanes, flooding, droughts and heat/cold waves– will become more frequent, more geographically widespread and, above all, more intense as a result of climate change; (2) it is highly likely that infectious diseases such as malaria and dengue fever will broaden their geographical scope of transmission as a result of climate change; and (3) as climate change becomes more evident, it is likely that major alterations will take place in the planet's biodiversity, possibly triggering new, unknown threats to human health.

In general terms, climate change could be described as a huge and continuous natural disaster whose impacts amplify what we might call the 'normal' biological or meteorological damage provoked by natural disasters, making such disasters more frequent as well. A *magnifier of the magnifiers* of natural disasters is gradually emerging on the strategic horizon. Paradoxically, the pace of climate change is also quickening, thanks largely to globalisation and demographic growth. In strategic terms, this means that natural disasters are already capable of disturbing social order, the rule of law, etc., and that they should accordingly be regarded as a risk that requires some sort of mobilisation of a country's security forces. Therefore, the time has come to think about reinforcing strategies, if they indeed exist, for dealing with these types of risks in the future.

## Strategic Risks of Cyberspace<sup>[3]</sup>



New technologies, particularly the Internet, have modified patterns of communication and consumption behaviour. These changes are largely beneficial to society. But we should not ignore the fact that new technologies also provide criminals and terrorist groups with very powerful tools.

In a sense, the Internet has become a Trojan horse for Jihadist terrorism in the West, enabling its protagonists to magnify the impact of their actions worldwide. This new tool has substantially altered the behaviour of terrorist organisations, giving rise to what has been dubbed 'post-modern terrorism'. This section analyses some of the more immediate implications stemming from the use of the Internet by international Jihadism.

First, cyberspace has enabled terrorist groups to become independent from the conventional media's traditional propaganda tools. For example, whereas the television channel *al-Jazeera* was the major revelation of the second Gulf war, the Internet has displaced it as the principal vehicle for disseminating the horror of international terrorism. As a result of its low cost and global reach, the Internet allows any terrorist group to convey its ideological message and demands, even to broadcast videos of executions and combat scenes, literally around the world.

The language employed in such dissemination plays an important role. On the one hand, Arabic is used to justify and spread the ideology of Jihadism. On the other, English is used to spread terror and disseminate counter-information. The battle for the control of information flows has led the US to invest 62 million dollars in setting up the Arabic television channel *al-Hurra* ('the free channel') and the terrorist group al-Qaeda to counterattack by broadcasting television programmes such as 'The Voice of the Caliphate' in order to get its vision across to public opinion. Therefore, while Jihadist terrorists have lost strength in the battle on the ground in Afghanistan, the creation of the Global Islamic Media Front is transferring the battlelines to the Net.

Second, the Internet is becoming a recruitment and training tool for the terrorist cause. The proliferation of chat rooms is attracting the attention of potential young terrorists and exercising substantial influence on their indoctrination. The dissemination of training and combat videos, along with manuals for manufacturing explosives is converting the Internet into an independent, distance-learning school for the recruitment and training of future terrorists. Examples of this development can be seen in the document entitled, 'How can I train myself for Jihad', which has circulated widely over the Internet, and in a video of the 'Top 10' battles of the international Jihad against US forces.

Finally, the Internet has revolutionised the organisation of terrorist groups and their methods of planning attacks. The nebulous and dispersed al-Qaeda adapts to the workings of the Internet by setting up small and anonymous groups that are difficult to identify, thus hindering the antiterrorist fight. As for planning, access to Internet documents, images and information on possible targets, together with the anonymity the Internet provides for exchanging messages, facilitate the interconnection of terrorist groups across the planet.

The combination of these three factors has caused collateral damage of various types to both Western and Arab societies. The first is the Internet itself. Since 2001, the proliferation of laws regulating data control has eroded individuals' right to privacy in Western society. Furthermore, according to the *Arab Human Development Report 2004*,<sup>[4]</sup> Arab societies have been subjected to greater censorship with respect to Internet access, while freedom of expression has been attacked. We are consequently witnessing the proliferation of the storage of data on our citizens in Western countries and spread institutions specialised in controlling Internet access in Arab countries, particularly Saudi Arabia, Tunisia and Syria.

The multiplication of terrorist groups websites is also sowing confusion, as they claim authorship of attacks simultaneously or disseminate clashing guidelines. At the same time, within the international terrorism movement, the al-Qaeda franchise acts as a centripetal force that binds together many organisations, creating the image of homogeneity and of a consensus within Jihadist terrorism. The inability of States to control the Internet is giving rise to what we might call Internet militia or 'patriots' (such as the *Internet Haganah Website* <sup>[5]</sup>) who attempt to shut down terrorist websites on their own initiative and wage their own personal information battles.

The question arises as to what extent terrorists have taken advantage of the possibilities that Internet has to offer. If the purpose of propaganda is to create an environment of complicity conducive to the recruitment of new members of the terrorist cause in the Arab world, it is reasonable to suppose that we are only in the initial stage. Reports on Internet use underline that only 1.6% of worldwide users come from the Arab world. What is more, at the end of 2002 only three Arab countries had an Internet use rate of over 10% and in 14 of the 22 Arab countries less than 5% of the population enjoyed Internet access. Over 40% of Arab 'internauts' are concentrated in six countries of the Gulf Cooperation Council <sup>[6]</sup>. The Arab user profile, developed by the International Telecommunications Union (ITU), yields an average age of 30 years old, 70% with qualifications, 88% of whom speak English, and 95% of whom are men.<sup>[7]</sup> To this should be added the high illiteracy rate in Arab countries, which varies significantly from 13% in Bahrain to nearly 50% in Morocco. This data may perhaps downplay the impact of the dissemination of terrorist ideology, but the asymmetry between the hub of terrorist dissemination and its final repercussion may be due to behavioural differences. Whereas Western societies tend to prefer individual Internet access, cybercafés appear to be more popular in Arab societies, and their impact and in terms of diffusion is therefore multiplied. The continuous growth of Internet access in Arab countries raises unknown factors with respect to future strategic landscapes in which new –and more representative– players will emerge on the Internet, leading to changes in the current situation.

In the final analysis, we cannot rule out the possibility that terrorist use of the Internet and information technology may develop in such a way as to cause material damage to society. With growing economic activity between increasingly interconnected groups, the network provided by the technology that makes this interconnectivity

possible is becoming an ideal target for financial crime but also for terrorist groups. To put it simply, the more the digital doors to society and the business world multiply, the more vulnerable modern society will become to digital attacks. Although cyber-attacks on society in general are less dangerous than a traditional attack, they nevertheless have an important psychological impact: they undermine faith in the stability of the system, thus imposing massive costs. A significant cyberattack could entail loss of billions of euros as the result of the financial system grinding to a halt, as well as require the reconstruction of the system after the attack. If attacks of this kind become frequent, citizens could easily lose confidence in financial systems and investor incentives will diminish, causing economic damage above and beyond that of the cyberattack in itself. Not only financial systems are exposed to the risk of an attack launched from cyberspace, but also our military systems and the aviation industry, to mention just a few, as they depend more and more on information technology for their daily operations. The computer systems of all these players are potential targets for any terrorist organisation seeking to inflict material damage on modern society.

Since the fabric of cyberspace is largely a 'superstructure' that does not depend on the frontiers that define our nation-states, the strategic risk posed by cyberspace is by definition an international risk. This has certain implications for the design of the countermeasures necessary to reduce the threat and crack down on international terrorist activity. In order for them to be effective, such measures will require a high level of international cooperation and a coordinated strategy. Therefore, one of the principal challenges to be faced in combating the ill-intentioned use of new technologies would be to manage an effort at the international level –and not simply at a national or regional level–.

### **The Economy and Energy: Light and Darkness on the Strategic Horizon**

The world's strategic landscape has been relatively calm in recent years thanks mainly to the positive and stabilising contribution of the international economy. Although varied strategic challenges have arisen as this chapter has revealed, the smooth and vibrant pace of the world economy has made these challenges much more manageable than they might have been. However, the support that the strategic landscape has received from the world economy over the past three years is now grounded upon an increasingly unstable and possibly unsustainable foundation. When the world economy begins to feel the strain of inevitable adjustments and corrections –not to mention the effects of counterproductive or destabilising political reactions from certain governments– many of the potential strategic risks facing us –both conventional threats and the less traditional challenges analysed above– will grow more significant.

In 2005 the world economy grew at a pace of 4.3% after recording a rate of 5.1% in 2004 –the highest global economic growth in a generation– and 4% in 2003. It is generally agreed that the forecasts for 2006 point to a growth rate of around 4.3%, making this the strongest four-year period of growth that the world economy has witnessed in more than 30 years.<sup>[8]</sup> Furthermore, this growth has been synchronised in all parts of the world, and in most areas the growth rates recorded over these past four years are significantly higher than the annual averages of the past 20 years.

The most optimistic scenario would be for the world economy to carry on with its dynamism in a sustainable fashion. Some might think that this is the most likely scenario, but it is becoming increasingly possible that this trend will not continue beyond the very short term. Apart from the new less conventional risks now emerging on the strategic horizon, (Avian flu and other pandemics, natural disasters, climate change and sophisticated forms of international terrorism abetted by the Internet) –any of which could easily exercise a destabilising influence on the world economy– there are a number of other short-term risks that could stall world economic growth. These include, above all: (1) an abrupt adjustment to the increasingly large macroeconomic imbalances straight-jacketing the world economy; (2) a fresh outburst of protectionism and potentially even a trade war (possibly as a result of the ultimate failure of the Doha Round, possibly as a related consequence to continuing global economic imbalances); and, finally, (3) high and rising energy prices, a development which could inject 'stagflationary' (both recessionary and inflationary) pressures into the world economy. Because the first of these two risks we have dealt with extensively elsewhere, and because we believe that the upward trend in oil prices currently represents the most concrete threat to continued rapid world economic growth, we will concentrate our attention here on that specific risk.<sup>[9]</sup>

#### *The Threat of Higher Oil Prices*

In January 2006 the price of oil soared above US\$65 per barrel, not far below the then record level in nominal terms (US\$70 for West Texas Intermediate and US\$67 for Brent).<sup>[10]</sup> The price has more than tripled in the four-plus years since the beginning of January 2002. As for annual average prices, the average price level in 2005 more than doubled that of 2002 (see Table 2).

**Table 2. Oil Prices, West Texas Intermediate (WTI) and Brent, 1996-2005**

Year	WTI (US\$/bbl)	% Annual Growth	Brent (US\$/bbl)	% Annual Growth
1996	22.12	–	20.67	–
1997	20.61	-6.8	19.09	-7.6
1998	14.42	-30.0	12.72	-33.4
1999	19.35	34.1	17.97	41.3
2000	30.38	57.0	28.50	58.6
2001	25.98	-14.5	24.44	-14.2
2002	26.18	0.8	25.02	2.4
2003	31.08	18.7	28.83	15.2
2004	41.51	33.6	38.27	32.7



2005	56.37	35.8	55.00	43.7
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Note: annual average daily prices; 2005 until 23 November.

Source: British Petroleum *Statistical Review of World Energy 2005* and Energy Information Agency of the US, compiled by the authors.

In real terms, the average price of oil in 2005 moved closer to the highest level reached in contemporary history, although it would have to rise by at least another 40% to equal this historical peak (see Graph 5).<sup>[11]</sup>

#### Graph 5. Oil Price Shocks, 1972-82, 1995-05



Source: British Petroleum *Statistical Review of World Energy 2005* and the Energy Information Agency of the US.

Although oil prices began to show an upward trend in 1999 –after bottoming out at approximately US\$12 per barrel– the continuous rise since 2002 has not impaired the recovery of global growth which, on the contrary, has been gaining strength. The traditional reference rule that each sustained hike of US\$10 per barrel in oil prices slashes world economic growth by about 0.5% (and adds more or less half a percentage point to inflation) has not applied to the recent evolution of the world economy (see Graph 6).

There are several reasons why the world economy has not yet suffered the effects of rising oil prices. First, the world's central banks have achieved an unprecedented level of credibility over the past few decades and have managed to keep world inflation at very low and stable levels for many years now (under 6% since 1997 and under 4% since 2002). As a result, the powerful inflationary expectations of private economic agents, originally generated during the oil shocks of the 1970s (when world inflation soared dangerously into double-digits, 14.5% in 1974 and 17.2% in 1980) have been progressively eliminated. This change has given the world's central banks a significant margin of flexibility to maintain interest rates at historically low levels, despite increasingly high oil prices. Although the central banks have now begun to raise interest rates again, (the Fed began in summer 2004 and the ECB in December 2005), these rate hikes have been gentler and more gradual than during the second oil shock of 1979-80.

#### Graph 6. World Growth During the Three Oil Price Shocks, 1973-82 and 1999-2008



Note: the figures for 2006, 2007 and 2008 are projections Source: IMF.

Furthermore, economies have also improved their energy efficiency since the 1970s. The world's advanced economies use only half the oil they once did 30 years ago in order to generate a single unit of GDP. Meanwhile, developing economies, still more energy intensive, have nevertheless cut their oil intensity by 30% over the same period. This improvement in efficiency makes GDP growth that much less vulnerable to oil price hikes.

Finally, the oil price shocks of the 1970s (and the other two mini-shocks of 1990-92 and 1999-2000) were caused by politically-triggered interruptions in the supply of crude oil, whereas the current shock is largely due to rising demand (see Table 3), driven by substantial world economic growth. The implication of this is that when a rise in oil prices is due to increased demand, the economy suffers less in terms of lost growth than when the rise is caused by restrictions, whether political or natural/accidental, in supply.

Table 3. World Oil Demand, 1994-2005 <sup>[12]</sup>

Year	World Consumption (mbd, Annual Average)	Growth (%, Annual)	Growth (mbd, Annual Average)	World GDP Growth (%)
1994	68.4	1.73	1.3	3.8
1995	69.5	1.46	1.1	3.6
1996	71.1	2.55	1.6	4.1
1997	73.2	2.56	2.1	4.2
1998	73.6	0.47	0.4	2.8
1999	75.1	1.82	1.5	3.7
2000	75.8	1.08	0.7	4.7
2001	76.4	0.50	0.6	2.4
2002	77.3	0.96	0.9	3.0
2003	78.7	1.86	1.4	4.0
2004	81.4	3.91	2.7	5.3
2005	82.5	1.01	1.1	4.9

Source: British Petroleum *Statistical Review of World Energy 2006*.

In any event, the impact of oil prices on the world economy will depend on what happens to oil prices *from now on*. Everything indicates that if prices remain stable at their current level (US\$60-US\$65/bbl at the time of the original publication in early 2006), the economic repercussions will be minimal particularly since the inflationary impact from oil price increases has been very mild –at least so far–. The overall inflation rate for Europe was the same in 2005 (2.2%) as it was the previous year, whereas in the US the inflation rate for 2005 was 3.4% (compared to 3.3% in 2004). Inflation in China, the other major source of energy demand, also continues to be low. World inflation has gone from 3.7% in 2003 to 3.9% in 2005, a much lower level than during the 1990s and a very modest increase in

view of the unprecedented rise in oil prices and the powerful surge in world economic growth registered during the same period.

This suggests that rises in the price of oil have not yet had broad-ranging second round effects upon prices in general. Although a cascade of secondary effects on the general price level still seems to be inevitable, given the transportation sector's almost complete dependence on oil, such second round effects will remain limited as long as the credibility of the world's central banks remains intact –and oil prices do not continue to surge to unprecedented levels–. Therefore, if oil prices remain stable at their current level, there is no reason for them to exert an additional inflationary impact from now on. This would mean that the normalisation that interest rates are currently experiencing might not be so marked or abrupt, and that the expected economic deceleration will be moderate, with world growth remaining in the region of 4%-4.5% in 2006 and 3.5%-4% in 2007.<sup>[13]</sup>

However, it seems that we are approaching a very delicate threshold for oil prices. It will be difficult to convincingly maintain that oil prices could continue to rise substantially from now on without putting an end to the current period of robust economic growth. If oil prices go beyond the US\$70 per barrel barrier and soar as high as US\$80 or more, the inflationary impact could be considerable and the foreseeable reaction of the central banks will be to raise interest rates more sharply, with the resulting negative impact on the world's economic growth rate.

We therefore need to ask what will happen to oil prices in 2006 and 2007. Until only recently, the outlook was relatively bright. A milder winter, an at-least-temporary pause in the growth rate of petroleum demand, and an increase in non-OPEC production were the three factors needed to create a scenario (A) in which prices would drop to US\$50 per barrel or, if OPEC proved incapable of cutting production to protect this level, even lower (scenario A<sub>1</sub>). These scenarios would have had a very positive influence on inflation and world growth. At any rate, even though scenarios A and A<sub>1</sub> are still feasible, several recent changes on the strategic landscape have made them increasingly unlikely.

First, winter temperatures in the northern hemisphere have been somewhat lower than originally forecast back in the fall of 2005, leading to a higher than expected consumption of oil products. Second, OPEC already –although not intentionally– experienced a reduction in its production levels at the end of 2005 owing both to the continual interruptions to Iraq's production, and to other factors that affected other OPEC member states. The social unrest in Nigeria's Delta region, for example, has diminished the country's production by nearly 100,000 barrels a day and it is possible that the oil workers' unions may have to withdraw from the production areas for security reasons. This is threatening to lower Nigeria's output much more significantly, pointing to the likelihood that the expected increase in non-OPEC production for 2006 will be undermined by unforeseen restrictions within OPEC itself. In addition, the Iranian nuclear crisis continues to destabilise the oil markets, pushing up January 2006 prices to a level (US\$65 per barrel) at least US\$10 higher than the average for 2005. Unless the Nigerian and Iranian situations are resolved soon, the more favourable scenarios (A and A<sub>1</sub>) are unlikely to unfold (see Table 4).

The most favourable situation at the present would seem to be a scenario (B) in which the average price remains at some US\$60 to US\$65 per barrel throughout 2006. While there have been very wide discrepancies in the estimates for world oil demand in 2006, and for the expected increase in non-OPEC production, should conditions remain stable, particularly in Nigeria and Iran, the most likely variations in demand (an increase of between 1.3 mbd and 1.86 mbd in 2006) and in non-OPEC supply (an increase of between 1 mbd and 1.4 mbd) would put the range of possible average prices at between US\$55 and US\$65 per barrel for 2006 (eg, Scenario B).

However, if the situation in Nigeria worsens, OPEC countries –chiefly Saudi Arabia– could put some of their idle capacity into production so as to mitigate the Nigerian impact on world prices. This scenario (B<sub>1</sub>) would be somewhat worse than the previous one (B), with prices remaining at between US\$65 and US\$70 per barrel until Nigerian production returned to normal levels. But if Iranian oil exports were to drop significantly (for example, as the result of the Western countries placing economic sanctions on Iran) even as Nigerian output remains depressed –or even drops more substantially– or should all of Iran's 2.5 mbd of oil exports be cut off (as a result of an embargo placed by Iran itself on Western countries, irrespective of what is occurring in Nigeria), we would be dealing with another much more negative scenario (C). In scenario C, the OPEC could not compensate for all the lost oil output. Prices would break through the technical and psychological barrier of US\$70 per barrel and would approach US\$80 or US\$85 per barrel, bringing the average price for 2006 up to around US\$70-75 dollars per barrel.

Scenario C would imply a potentially lethal price shock to the world economy. A new sustained rise over US\$70 per barrel would probably put an end to the period of substantial world economic growth and could possibly even spark a dollar crisis (as the global macroeconomic imbalances, alluded to previously, begin to abruptly unwind) and a dangerous resurgence of protectionism. Scenario C is the gloomiest from the perspective of possible developments in oil prices and their potential impact on the world economy in 2006. This scenario, triggered by mounting tension over the current Iranian nuclear crisis, would undermine the cushioning impact that strong world growth has been exercising upon the strategic landscape and would, as a result, accentuate all the risks emerging on the strategic horizon that have been analysed earlier in this paper.

**Table 4. Oil Price Scenarios for 2006** <sup>[14]</sup>

Potential Scenarios	Demand Increase(2005/06)	Non-OPEC Supply Increase(2005/06)	OPEC	Nigeria: Export Level	Iran: Export Level	Brent Price (US\$)	Economic Impact (2004: 5.3%)

							<b>2005: 4.9%)</b>
A (optimistic)	1.2mbd	1.5-2.0mbd	Effective at cutting production	Status quo	Status quo	50	Positive 4%-4.5%
A <sub>1</sub>	1.2mbd	1.5-2.0mbd	Ineffective at cutting production	Status quo	Status quo	40-45	The 'best case' scenario 4.5%+
B (status quo)	1.6mbd	1.2mbd	status quo	Status quo	Status quo	60-65	Benign 3.5%-4%
B <sub>1</sub>	1.6mbd	1.2mbd	Effective (sufficient idle capacity)	Worsens	Status quo	65-75	Moderate deceleration 3%-3.5%
C (pessimistic)	1.6mbd	1.2mbd	Not effective (insufficient idle capacity)	Worsens	Significant drop	75-85	Significant deceleration 2%-3.0%

Source: Elcano Royal Institute

### Energy Dependence and Spanish Interests

Spain's energy dependence poses strategic risks that are no less acute or challenging than those faced by the other advanced countries. Spain's demand for the two principal hydrocarbons –oil and gas– has grown enormously in recent years. Since 1965, oil consumption in Spain has increased by an annual average of 4.5%, a considerably faster pace than the world rate (2.5%). This differential is fairly similar for the period since 1980 (1.75% in Spain compared with 1.2% in the rest of the world). However, in the past 10 years, the gap between Spain and the rest of the world has widened even further, with an average annual growth of 3.5% in Spain compared to global growth of only 1.8%. The same phenomenon can be seen in Spain's growing demand for gas. Over the past 10 years, Spain's consumption of natural gas has increased at an average annual rate of 15%. Since 1993, gas consumption in Spain has increased by nearly 275% and now accounts for over 16% of the primary energy mix (more than any other traditional energy source except oil, which now accounts for 53%).

Today, oil and gas together account for 70% of the primary energy consumed in Spain (compared with 62% in 1990), much higher than the European average (64%) and an indicator that Spain is even more dependent on the principal hydrocarbons than other advanced countries (65% in the US, 64% in the OECD and 61% in the world).

In 2004 Spain consumed primary energy –including oil and derivatives (53%), natural gas (16.9%), coal (14.5%), nuclear energy (9.8%) and hydroelectric energy (5.4%)– equivalent to nearly 3 million barrels of oil daily, just under 1.5% of the total amount consumed in the world (over 205 million barrels of oil equivalent per day). It is a reasonable bet that unless Spain's energy policy and consumption patterns change, the national demand for energy will continue to grow at a faster rate than the world average. The energy issue is therefore of paramount importance to the continued smooth running of the Spanish economy.

### Graph 7. Primary Energy Consumption in Spain, 1990-2004



Note: mbep/d = oil equivalent, millions of barrels per day.  
Source: British Petroleum *Statistical Review of World Energy* 2005.

### Imports, Geographical Dependence and Potential Geopolitical Risks

Spain largely depends on imported energy, particularly for the principal hydrocarbons. Its oil and gas reserves are so small as to be merely testimonial. Its current annual production of oil and gas, limited to a handful of minor production sites, covers less than 0.4% and 0.9%, respectively, of annual domestic consumption. Of the nearly 1.6 million barrels of oil consumed daily in 2004, over 99.6% were imported. Over 99% of the gas consumed in Spain that same year (an amount equivalent to 0.5 million barrels of oil per day) was also imported.

Spain currently depends on a small number of countries for its energy imports: chiefly Russia, Algeria, Nigeria, Libya, Saudi Arabia and Mexico, the six suppliers with at least a 5% share in the Spanish energy market (see Table 5). More than 54% of all Spain's energy imports comes from these six countries, and Russia and Nigeria have upped their market shares by nearly 75% over the past four years.

**Table 5. Energy Imports, Spain, January-October 2005**

Position	Country	Imports (€ billion)	%
1	Russia	3,365	12.87
2	Algeria	2,918	11.16
3	Nigeria	2,321	8.87
4	Libya	1,842	7.04

5	Saudi Arabia	1,591	6.09
6	Mexico	1,583	6.05
7	Italy	1,248	4.77
8	Iran	1,206	4.61
9	Norway	1,069	4.09
10	Iraq	824	3.15
	Subtotal	17,971	68.71
	Total	26,154	100

Note: data taken from chapter 27 of Spain's customs tariff. Includes coal, hydrocarbons and electricity.  
Source: *Mercados Emergentes*, based on data from Estacon.

From Russia, Saudi Arabia and Mexico, Spain imports oil almost exclusively. From Nigeria and Libya it imports oil but also sizeable quantities of gas. Around 65% of all Spanish oil imports come from these five countries.

**Table 6. Oil Imports, Spain, Percentage of Total, 2002-05**

Position	Country	2002 (%)	2003 (%)	2004 (%)	2005 (%)
1	Mexico	13.8	12.7	13.4	15.1
2	Russia	14.1	17.2	14.7	14.4
3	Nigeria	9.4	11.1	10.9	12.0
4	Saudi Arabia	12.0	12.2	11.6	10.6
5	Libya	11.5	13.3	12.3	10.4
6	Iran	5.8	7.4	6.4	8.3
7	Norway	3.9	5.4	6.2	5.0
8	Iraq	4.2	2.7	7.7	4.9
9	Algeria	1.9	2.6	3.1	3.5
	<b>Subtotal</b>	<b>76.6</b>	<b>84.6</b>	<b>86.3</b>	<b>84.2</b>
	Other countries	23.4	15.4	13.7	15.8

Source: *Boletín Estadístico de Hidrocarburos*, Ministerio de Industria, Turismo y Comercio, December and January 2005; *Anuario Estadístico de España 2005*, Instituto Nacional de Estadística.

Furthermore, gas imported from Algeria –nearly half of which reaches Spain via the Maghreb-Europe Gas pipeline (MEG or Pedro Durán Farell) passing through Morocco– accounts for nearly 50% of Spain's consumption.<sup>[15]</sup> Nigeria (15%), Qatar (14%), Egypt (8.5%), Norway (6.5%) and Libya (2.7%) are also important sources of liquefied natural gas (LNG).

**Table 7. Natural Gas Imports, Spain, 2002-05**

Position	Country	2002 (%)	2003 (%)	2004 (%)	2005 (%)
1	Algeria	58.5	57.4	49.8	43.3
2	Nigeria	7.6	16.9	18.0	15.6
3	Qatar	10.0	8.2	14.1	13.9
4	Egypt	–	–	0.3	10.1
5	Norway	10.8	10.0	8.0	6.3
6	Oman	5.1	2.4	5.0	5.1
7	Libya	2.9	3.1	2.5	2.7
8	Trinidad and Tobago	2.2	0.1	–	1.2
9	Malaysia	–	–	0.9	0.8
10	United Arab Emirates	1.0	1.6	1.4	0.7
	<b>Subtotal</b>	<b>98.1</b>	<b>99.7</b>	<b>100</b>	<b>99.7</b>
	Other countries	1.9	0.3	0	0.2

Source: *Boletín Estadístico de Hidrocarburos*, Ministerio de Industria, Turismo y Comercio, December and January 2005; *Anuario Estadístico de España 2005*, Instituto Nacional de Estadística.

It can generally be said that Spain's sources of petroleum are fairly diversified. Furthermore, the fact that the international oil market is a fungible market with alternative sources affords Spain a certain amount of stability, as it reduces the risk of a hypothetical disruption of supply from a particular country. Even so, Spain is heavily dependent on oil which accounts for over 50% of its primary energy use (compared to only 40% in the US and in the world in general) while over 99.6% is imported. Given that the oil market is fungible and international, Spain continues to be particularly sensitive to price shocks in a market whose prices are highly volatile owing to scant current spare capacity (less than 3% of world consumption).

Spain also imports over half of its oil from only six OPEC countries (Saudi Arabia, Libya, Nigeria, Iran, Iraq and Algeria) which are neither consolidated democracies nor stable or predictable regimes. A further 11% comes from

African countries with similar characteristics. European partners (such as the United Kingdom and Norway) account for barely 5% of Spanish petroleum imports and are unable to increase this proportion much more on account of their limited output. Mexico continues to be an important partner (the second largest supplier during the 2002-2005 period and the leading Spanish source in 2005), but lacks the potential to boost its production easily. This leaves Russia, Spain's most important oil supplier in recent years, though Russia neither has the capacity to increase its exports in the short term nor is it the most reliable regime in terms of energy supply, as witnessed during the recent crisis with the Ukraine and the general 'nationalistic' drift of Russian energy policy over the past years. All things considered, the fact that over 75% of all Spanish oil imports (equivalent to 40% of its primary energy consumption) comes from non-democratic or unstable regimes (ie, those of the Middle East, Africa and Russia) rapidly leads us to the conclusion that the Spanish economy does indeed face a high level of energy-related geopolitical risk.

Furthermore, although Spain is quite advanced in its use of liquefied natural gas –making its gas imports more flexible– nearly 60% of all imported gas (over 10% of primary energy consumed) comes from three North African countries (Algeria, Egypt and Libya, and nearly half from Algeria alone). Much of this gas reaches Spain via the MEG gas pipeline that runs through another Maghreb country, Morocco, and will continue to do so until the Medgaz pipeline, a joint project of CEPSA and Sonatrach that will link Beni Saf in Algeria directly with Almería in southern Spain, comes into service in 2008-09. But even once this direct pipeline is up and running, Spain will continue to depend on Algeria and to a lesser extent on Libya for its natural gas supply. As gas continues progressively to account for a larger proportion of energy consumption, this dependence will further underline how important stability in the Maghreb –and North Africa in general– is to Spain's fundamental interests.<sup>[16]</sup>

Therefore, what happens in the Persian Gulf and in North and West Africa is of paramount importance to Spain as it depends on these three regions for 40% of its primary energy consumption. More than most of its European partners and transatlantic allies (ie, Canada and the US), Spain has a fundamental interest in the stability and development of the Arab and Islamic worlds and in the maintenance of good relations with these countries.

#### *Diversification and Energy Policy*

In the end, unless the Spanish economy's energy base experiences a significant transformation, Spain will become increasingly dependent on oil imports from the Middle East, particularly the Persian Gulf –as will all the world's major oil importers–. This likely trend in the pattern of Spain's energy dependence suggests that diversifying the country's primary energy mix and reducing the economy's dependence on oil and petroleum derivatives ought to be a policy priority. Although gas may still come to account for a larger share of the primary energy mix, Spain's significant dependence on the Maghreb region points to the wisdom of making a greater effort to encourage alternatives other than hydrocarbons.

For the time being, there is some margin for expanding renewable energy sources (eg, wind and solar) –a sector in which a number of Spanish companies figure among the world's leaders– and even nuclear energy (should it ultimately prove to be politically and economically viable). Even so, these alternatives are only capable of serving as short- or medium-term substitutes for gas and coal in electricity production, but not as alternatives to the basic use of oil in transport and agriculture. Although they would help Spain meet its obligations under the Kyoto Protocol (an area in which Spain is currently one of the poorest performers in Europe), they would have only a minimal impact on the country's great vulnerability to oil price fluctuations on the international market and to potential interruptions in the supply of hydrocarbons from the less-than-stable countries mentioned above.

In this connection, it should be a priority for Spain and for Europe to design and implement a strategy to diversify energy sources, reduce the intensity of oil use and generally boost efficiency. In the medium and long term –that is over the next two decades– other non-traditional sources will need to be sought to replace oil, in particular, and to be incorporated into the economy's energy base in an economically rational and non-traumatic fashion. In this regard, the December 2006 publication of the Strategic Review of European Energy Policy (currently being conducted by the European Commission), along with the subsequent debate on energy during the run-up to the Spring Council next year will be of great interest to Spain.

#### **Dilemmas of the Medium- and Long-Term Energy Outlook**

Although the scope of this chapter does not allow us to analyse in depth the various long-term energy scenarios, we do believe it is essential to briefly consider the longer-term energy outlook in order to underline the fact that the energy issue has strategic implications beyond the price scenarios for 2006 or 2007. The economic and energy scenarios may seem complicated in the short term, but unprecedented dilemmas and challenges are emerging on the longer-term horizon. The outlook for the longer term points to a shift to a post-hydrocarbon energy economy as one of the most important human challenges in the history of mankind.

#### *Medium-term Geopolitical Challenges*

The concentration of oil and gas reserves in the Middle East and former USSR (72% of world oil and gas reserves) implies greater geopolitical competition in the medium term between consumer countries (eg, the US, Europe and East Asia) to secure sufficient supplies of hydrocarbons from the Middle East, Central Asia and Russia (particularly Siberia and the Russian Far East). This trend is sharpening as the result of the galloping demand of the large emerging economies like China and India, which are becoming increasingly dependent on oil and gas imports.

Other factors are complicating the situation further. For example, none of the countries belonging to this 'great energy crescent' (Middle East + Central Asia + Russia/Siberia) is a consolidated democracy; indeed, many are de-facto autocracies and some are, for all practical purposes, failed states. Furthermore, nearly all the reserves and hydrocarbon production of this 'energy crescent' are in the hands of state companies (the so-called NOCs, or



'national oil companies'), a factor that serves as an obstacle to the investment plans of private companies (so-called IOCs, or 'international oil companies') from Europe and the US, which are being forced to operate with dwindling reserves and in increasingly marginal (and more dangerous and costly) areas of the world (such as Africa, for example). Furthermore, the new Asian consumer countries –particularly China and India– also have energy sectors dominated by state companies, now emerging as the natural collaborators of the NOCs of the producer countries of the 'Great Crescent'.

Over the past years, China has signed 'strategic agreements' –centred on energy cooperation– with Russia, Saudi Arabia and India, among others. Meanwhile, China's state-run companies have entered into their own agreements, particularly with other NOCs, to develop oil and gas production in a number of countries, including Canada, Venezuela, Sudan, Nigeria, Angola and Syria. Such developments not only pose huge challenges to Western energy companies but also increase the possibility that both the producer countries of the 'Great Crescent' and the consumer countries of Asia will make energy issues central to their foreign policy, wielding energy security as geopolitical weapon and establishing it as a chief foreign policy objective and guideline.

To this should be added the fact that the advanced OECD countries do not have a common energy policy. Nor do they individually have formal coherent national energy policies. Unless this situation changes, the energy security of the advanced economies will be increasingly under threat. Irrespective of whether or not an effective energy policy is designed, heightened competition for the energy resources of the countries of the 'Great Crescent' will increase geopolitical tensions and raise the risk of military conflict.

#### *Four Long-term Scenarios: Poverty, Climate Change, War and Transformation*

According to the projections of the International Energy Agency, world demand for energy in general and oil in particular will be at least 50% higher in 2030 than currently. Unless radical changes take place in the energy base of the world economy, a further 40 to 50 million barrels per day (mbd) will be consumed (and produced) *in addition* to the 84 mbd currently consumed –amounting to an increase of between 50% and 60%– not to mention the need to boost the production of other primary energy sources to meet world demand. This prospect gives rise to a three-headed dilemma that is threatening to deteriorate into a vicious circle.

##### *(1) Poverty, World Growth and Energy*

In order to significantly reduce poverty (in which live half of the population of the non-OECD countries), the world economy would have to grow even more quickly than currently (for example, at a rate of six or seven% instead of only 3% to 4%) and maintain this more rapid pace for decades. Such a benevolent scenario –likely or not– would lead to an increased demand for energy that would severely challenge the world hydrocarbons industry and put to a test its exploration, production, transportation and refining capacity. Simply to meet the demand projected from now until 2030 as a result of a much more modest growth rate of 3.5% annually (somewhat lower than the current rate, and the figure forecast by the IMF), world energy production would need to increase by at least 50%. Who will supply this volume of oil? Who will influence and control this hypothetical rise in production? Where will the necessary investment resources come from? Is it possible and at what price?

To achieve such production levels by 2030 would require an investment of some US\$17 trillion, according to the estimates of the IEA. Such an investment is equivalent to some US\$680 billion per year for 25 years –that is, an economic investment in energy roughly equivalent to Brazil's current GDP each year–. This challenge will test not only our physical resources (particularly given that world oil production may well reach its peak before 2030 and at a level below 125 mbd) but also our technical, business and political capacities. Nevertheless, if we do not achieve such production increases, world poverty will increasingly become a strategic risk for everyone given its negative impact on local ecosystems, mass migration towards advanced countries and possibly international political instability (to say nothing of the ethical implications of allowing a significant portion of the world's people to continue to live in poverty). If the current situation is politically and socially unsustainable (and the mere existence of the UN's Millennium Goals suggests that this is the case), the situation in 25 years into the future will be even less sustainable –if political and military conflicts with almost unconceivable consequences have not already occurred–.

##### *(2) Climate Change*

But even should we manage to produce enough hydrocarbons to continue to grow on a world-scale at a sufficiently rapid rate to begin to sustainably reduce global poverty, it is very likely that such increased hydrocarbon consumption (at least 50% greater than current levels) –and the concomitant greenhouse gas (GHG) emissions– will provoke a climate change much more destabilising than the continuity or worsening of world poverty. Without much more effective international cooperation in reducing carbon dioxide emissions than has been achieved to date, it is more than likely that global warming will trigger explosive social and political tensions following widespread coastal flooding, desertification in many areas and radical cooling in others, chaotic mass migrations and worldwide economic turmoil. The maintenance of peace, on the one hand, and the survival of democracy, on the other, could become not so much a distant dream as a nearly childish fantasy.

##### *(3) Resource Wars*

However, even if the most harmful effects of climate change do not materialise (as only a small minority of qualified scientists predict) continued growth in hydrocarbon consumption, consistent with current levels of economic growth, would lead to still another scenario with an equally disastrous result. As mentioned previously, there exists a growing body of evidence that many consumer countries, particularly but not exclusively the great emerging countries like China and India, are developing strategies to ensure sufficient supply and transport of hydrocarbons in order to feed their projected future growth. Sooner or later this trend, which shows no signs of subsiding, could easily give rise to increasingly tense military rivalry, as evidenced by the latest developments in Chinese naval

strategy or even the recent evolution of US foreign policy. The spectre of a 'resource wars' cannot be excluded from the range of credible possibilities.

#### *(4) The Challenge of Transformation*

If we do not give serious consideration to these global challenges –and to the possible ways of preventing these three different potentials paths from leading us nevertheless to the same destination– but by some miraculous stroke of luck manage to avoid their worst outcomes, we will still have to face the Gordian knot that underlies this triple dilemma. Over the next 25 years the world economy will need to increase oil output by at least twice as much as it did during the past 25 years (ie, augment current world petroleum output by another 40-50mbd compared to mere 22mbd barrels of extra output that the world' oil industry has added to supply since 1980). And this will have to be achieved in the face of great uncertainty regarding our ability to do so in technical, economic and political terms. Simply put, even in the best case scenario, this would require an historically unprecedented technical, financial and political effort.

Therefore, in order to have even a chance of overcoming the first negative scenario described above –continuation of world poverty– oil production would have to be increased at a pace hitherto never witnessed. However, to avoid the second scenario –politically destabilising climate change detonated by our carbon dioxide emissions– not only would a significant increase in energy production in the short and medium term be required but also a revolutionary transformation of our energy system that would allow for continue growth in energy consumption without a parallel increase in the emission of greenhouse gases. Finally, in order to disable the third scenario –military conflict brought on by competing national geopolitical machinations aimed at controlling economically essential energy resources– not only would an unprecedented increase in energy production *and* a transformation in our energy economy be required, but also more effective international cooperation diplomacy than has ever been achieved in the past so as to effectively manage the distribution of world energy resources while warding off military conflicts.

### **Conclusion**

Although some of the risks addressed in this paper (for example, avian flu or oil prices) might possibly play an important role on the short-term strategic horizon, the effects of others (increase in natural disasters, climate change, new pandemics, political instability and military competition) would largely be felt over the medium and long term. Between now and 2030, both Spain and Europe –like the US, China and the rest of the international community– will have to consider the possible combinations, alternative trends and likely impacts that these risks may unleash upon our strategic landscape. We would be well-served to begin the task now, while the still robust pace of economic growth allows us to and while there is still enough time to act in an anticipatory fashion.

In the short term, our potential risks come from all corners of the planet, and indeed from the international system itself (ie, the spread of bird flu and the impact of higher oil prices). However, in the long term, two regions appear to be central to the future of Spain and Europe: (2) the Arab-Islamic belt (Maghreb + Middle East + Central Asia) and Africa. The economic pressure and political instability that can spread to Spain from these areas through mass immigration (driven by poverty and climate change) and volatility in energy prices and supply (due to political instability or even 'wars over resources') are the most direct long-term strategic risks.

In conclusion, Spanish policy (appropriately articulated within the context of EU policy) should concentrate on the following long-term tasks in order to mitigate the possible negative impacts of these risks: (1) the design of emergency plans for reacting to new pandemics and for combating the effects of natural and man-made disasters; (2) the articulation of an energy policy aimed at diversifying Spain's primary energy mix beyond hydrocarbons; and (3) the execution of a foreign policy capable of facilitating the democratisation and economic development of both Africa and the Arab-Islamic world.

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- (1) The World Health Organization (WHO).
- (2) *GlobalSecurity.org*

Data on human movements and tourism are from the World Tourism Organisation (WTO).

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(7) National Institute of Statistics (Instituto Nacional de Estadística, INE), *Anuario Estadístico de España*, 2005.

[1] This paper was originally written in January 2006 and published in Spanish in March 2006 as a chapter ('Nuevos escenarios, nuevos desafíos: la transformación del horizonte estratégico') in the Spanish Ministry of Defence's annual publication, *El panorama estratégico 2005-06*. In this new edition, the authors have in some cases modified or updated certain materials directly within the text, while in other cases the necessary updates and changes have been analysed in footnotes to the original text.

[2] There have been several previous waves of globalisation throughout the history of mankind. The most recent is characterised, among other things, by mass global tourism and a very significant reduction in travel times.

[3] The authors are grateful to Natalia Sancha García for the information and first draft of this section.

[4] *Arab Human Development Report 2004. Towards Freedom in the Arab World*, UNDP, New York, 2005, p. 84-89.

[5] <http://intenet-haganah.co.il/haganah/>

[6] Sebastián Cáceres, 'Los países árabes y la sociedad de la información', Fundación Auna, Madrid, 2003.

[7] <http://www.itu.int/ITU-D/ict/papers/egypt2000/15-e.pdf>

[8] Since the original publication of this paper earlier this year, the world energy scenario has changed somewhat. In the year to date, oil prices have average nearly US\$70/bbl, some US\$20/bbl higher than assumed in our original baseline reference case, Scenario A, elaborated below. These higher prices correspond to Scenarios B or B1, in which world economic growth for 2006 would be no higher than 4% (and possibly as low as 3%). Given that we are well into the second half of the year, and that growth estimates have been adjusted downward in a number of countries, particularly in the US, even if they have been readjusted upward in other parts of the world, the more modest outlook of Scenario B might be more reasonable than Scenario A. Nevertheless, the IMF has just published (September 2006) its revised forecasts for 2006 and 2007 to 5.1% and 4.9%, respectively, up from 4.8% and 4.7% in April. Even the closed data from 2005 has been revised upward to 4.9% from 4.3%. All of this following a year in which average oil prices rose by 50%, and during a year in which they rose again nearly another third, at least to date. These developments suggest that perhaps the effects we predicted from such prices for 2006 will be delayed – but still unfold nonetheless—in 2007, or that the economy is proving far less sensitive to oil prices than anyone has ever imagined before. Our own call remains the former, as opposed to the latter.

[9] See, for example, Paul Isbell, 'Years of Living Dangerously: From the Twin Deficits to the Balance of Financial Terror?', Working Paper 28/2005, Elcano Royal Institute, 1/VI/2005.

[10] The price of oil has since reached US\$77-US\$78/bbl on a couple of occasions (most recently in August 2006), although for a number of weeks up to the time of this republication international oil prices moved within the US\$70-US\$75/bbl range.

[11] However, since the time of the original publication of this paper in early 2006, oil prices have by and large remained higher than US\$70/bbl, much closer to the all-time high in real terms (US\$82/bbl in 1980).

[12] This table has been modified since the original publication to reflect the new data and changes to data for

previous years now included in British Petroleum's *Statistical Review of World Energy 2006*.

[13] The reader should nevertheless keep in mind that since the time of the original publication of this paper in early 2006, oil prices have risen to over US\$70/bbl, hitting a peak around US\$78/bbl and settling in a range between US\$70/bbl and US\$75/bbl during the weeks leading up to this re-edition (although they have fallen to as low as US\$62/bbl since). Prices have nevertheless averaged this year some US\$10/bbl higher than assumed in the paragraphs above, and more than US\$20/bbl higher than in our baseline Scenario A, in which world growth would come in at 4%-4.5% in 2006. Given these higher prices for 2006 (US\$70/bbl on average), we would expect world growth to be no more than 4% in 2006 and as low as 3% in 2007.

[14] At the time of this re-publication, in early September 2006, some eight to nine months after the drafting of the original text, Scenario B1 seems to have taken hold of oil prices, now hovering at around US\$70/bbl, after having peaked again in August at nearly US\$80/bbl. While the demand growth for 2006 now appears to be well below the assumptions of this scenario (0.9mbd instead of the originally expected 1.6mbd), increases in non-OPEC supply also seem to be on track to come in far below original expectations (0.6/0.7mbd instead of 1.2mbd). While such changes might be expected to give oil prices at least some respite, the Nigerian context has deteriorated significantly since the beginning of the year (0.5mbd lost to disturbances in the Delta versus only 0.1mbd lost as of January 2006) and the Iranian situation –although no oil exports have yet been cut off– has not been resolved and is indeed on the brink of provoking the imposition of sanctions (if not outright military intervention). As a result, speculative pressures, riding on a perception of a justified and significant 'geopolitical premium' have kept oil prices at or above US\$70/bbl (ie, the equivalent of Scenario B1 outlined above). What is more, the risk is clearly on the downside, with a movement into Scenario C far more likely than a shift back to scenario A. Of course, any rebate of the various geopolitical pressures could allow for prices to fall toward US\$60/bbl, allowing world economic growth to continue apace.

[15] As a result, nearly 20% of all gas consumed in Spain comes from Algeria on the MEG pipeline via Morocco.

[16] In 2005, Spain was the world's third-largest importer of liquefied natural gas, consuming nearly 22 bcm a year (compared with Japan's 76 bcm, South Korea's 30 bcm, the US's 18 bcm and France's nearly 13 bcm). On the other hand, less than 12 bcm of the gas consumed annually in Spain arrives via land-based gas pipelines.

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